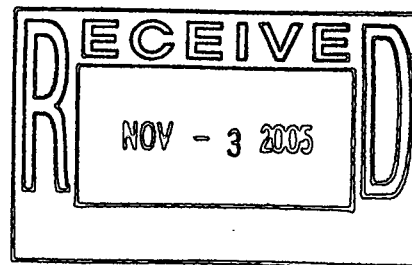


**RFCA Standard Operating Protocol
for Routine Soil Remediation
FY05 Notification #05-09
SW056 Outfall**

Approval received from the Environmental Protection Agency
November 2, 2005.
Approval letter contained in the Administrative Record.



October 2005

ADMIN RECORD

SW-A-005206

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Appendix A – Regulatory Contact Records

Acronyms

AL	action level
bgs	below ground surface
BMP	best management practice
BZ	Buffer Zone
CDPHE	Colorado Department of Public Health and Environment
COC	contaminant of concern
D&D	decontamination and decommissioning
DOE	Department of Energy
EDDIE	Environmental Data Dynamic Information Exchange
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
ER RSOP	Environmental Restoration RFCA Standard Operating Protocol
ft	foot
FY	Fiscal Year
HRR	Historical Release Report
IA	Industrial Area
IABZSAP	Buffer Zone Sampling and Analysis Plan
IASAP	Industrial Area Sampling and Analysis Plan
ICP	inter-coupled plasma (spectrometry)
IHSS	Individual Hazardous Substance Site
IM/IRA	Interim Measure/Interim Remedial Action
PAC	Potential Area of Concern
PCOC	potential contaminant of concern
pdf	portable document format
POC	point of compliance
POE	point of evaluation
RAO	remedial action objective
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RL	reporting limit
RSOP	RFCA Standard Operating Protocol
SAP	sampling and analysis plan
SSRS	Subsurface Soil Risk Screen
UBC	Under Building Contamination
VOC	volatile organic compound
WRW	wildlife refuge worker
XRF	x-ray fluorescence

1.0 INTRODUCTION

This Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) (DOE et al. 2003) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2004a) Fiscal Year (FY) 2005 (FY05) Notification addresses the remediation of a pipeline outfall and disruption of the pipeline at the Rocky Flats Environmental Technology Site (RFETS) during FY05. The purpose of this Notification is to invoke the ER RSOP for the outfall shown on Figure 1. Activities specified in the ER RSOP are not reiterated here; however, deviations from the ER RSOP are included where appropriate.

Recent sampling at SW056 indicated that 1,1-dichloroethene, carbon tetrachloride, methylene chloride, tetrachloroethene, trichloroethene, and vinyl chloride are present at concentrations greater than surface water standards.

2.0 REMEDIATION PLAN

2.1 Project Conditions

A 4-inch perforated PVC pipe is present in the area south of Building 991 as shown on Figure 1. The PVC pipe is also shown on Site Engineering Drawings, from 1980, 27550-017 and 27550-024. Surface water sampling station SW056, which receives runoff from the IA, is also located in this area (Figure 1). Recent analytical data indicates that 1,1-dichloroethene, carbon tetrachloride, methylene chloride, tetrachloroethene, trichloroethene, and vinyl chloride are present at concentrations greater than surface water standards as shown in Table 1.

Table 1
SW056 Results Greater Than Surface Water Standards

Analyte	Maximum Result (vg/L)	Surface Water Standard (vg/L)
1,1-dichloroethene	460	70
Carbon tetrachloride	25	0.25
Methylene chloride	29	4.7
Tetrachloroethene	280	0.8
Trichloroethene	140	2.7

Three IHSSs are in the vicinity of this pipeline – IHSS 153, IHSS 154, and IHSS 192. Soil contaminated with VOCs and PCBs was removed from IHSS 153 – the Oil Burn Pit, in 2005. IHSS 154, Pallet Burn Site, was sampled and analytical results indicated all contaminant concentrations were less than WRW soil ALs. IHSS 192, Antifreeze Discharge received NFA status in 1994.

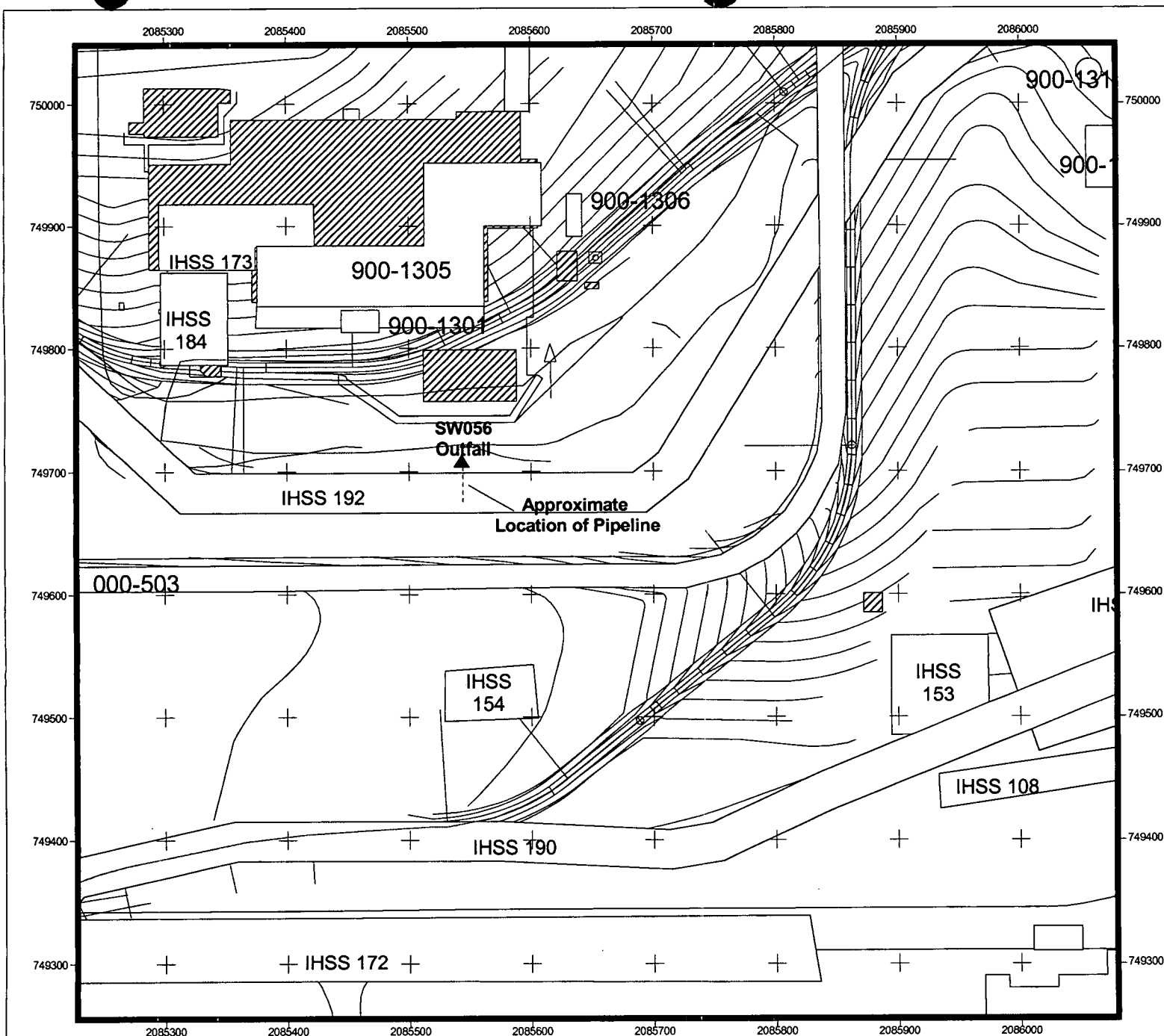









Figure 1
SW056
Location Map

KEY

-  IHSS
-  PAC
- Building**
 -  Demolished
 -  Standing
-  Pipe Location
-  Stream
-  Contour



20 0 20 40 60 Feet

Scale = 1:1500

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

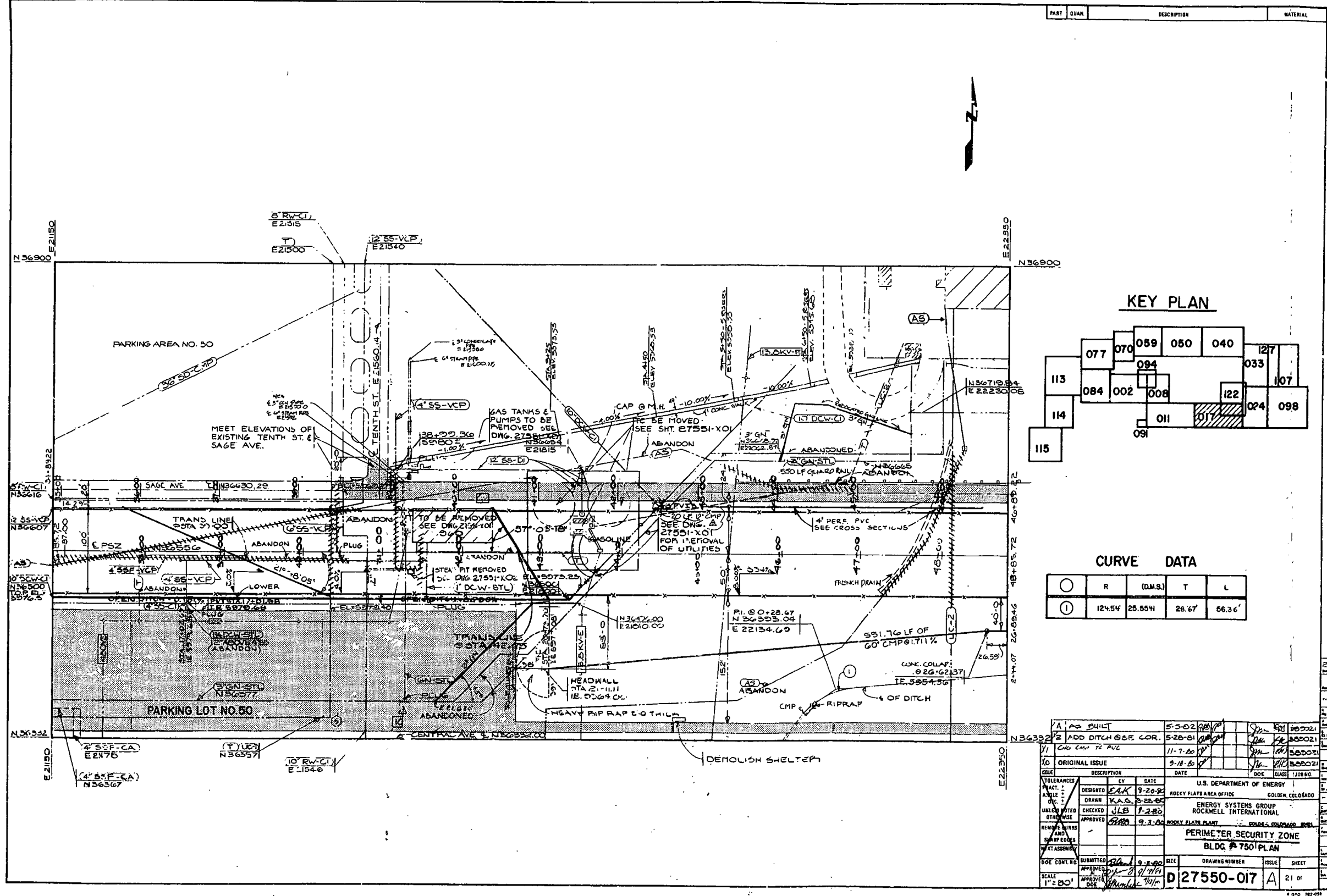
Prepared by:

RADMS

Prepared for:



Projects/2005/susanserrez/newpipe
October 2005



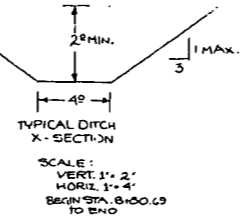
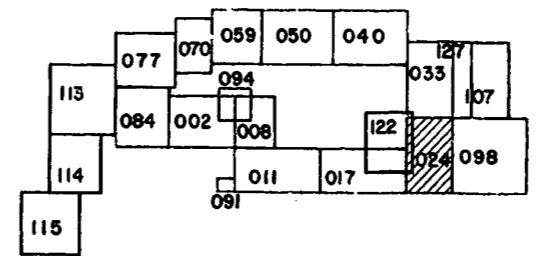
N37332

PART	QUAN.	DESCRIPTION	MATERIAL
------	-------	-------------	----------

NOTE:
FOR PROFILE OF DITCH SEE DRAWING NO. 27550-018 & -C99

CURVE DATA				
	R	Δ(D.M.S.)	T	L
1	137'	90	137'	215.20
2	30'	90	30'	47.12'
3	450'	32.4844	132.49'	257.71'
4	150'	54.238	7.48'	14.95'
5	150'	28.4848	38.53'	75.43'
6	148'	23.4845	31.21'	61.51'
7	150'	43.2053	69.61'	113.48'
8	250'	21.3926	47.82'	94.50'

KEY PLAN



1	AS BUILT	5-10-82	1/1	20	253221
2	ADD DITCH @ SOUTH END	5-20-81	1/1	20	253221
3	ADDED SUB DRAIN	11-16-80	1/1	20	253221
4	ORIGINAL ISSUE	9-12-76	1/1	20	253221
5	DESCRIPTION	DATE	CODE	CLASS	JOB NO.
TOLERANCES					
FACT	BY	DATE	U.S. DEPARTMENT OF ENERGY		
ANGLE	DESIGNED	8-20-82	ROCKY PLATE AREA OFFICE		
OR	DRAWN	8-25-82	GOLDEN, COLORADO		
UNLESS NOTED	CHECKED	9-3-82	ENERGY SYSTEMS GROUP		
OTHERWISE	APPROVED	9-3-82	ROCKWELL INTERNATIONAL		
REMOVE BUREAU	PERIMETER SECURITY ZONE				
AND	BLDG # 991 PLAN				
REKT ASSEMBLY	D 27550-024 A 28 OF				
DOE CONT'D	DRAWING NUMBER				
SCALE	ISSUE				
1"=50'	SHEET				

8-870 182-048

The closest IHSS is IHSS 192 which is located less than 10 feet from the SW056 outfall. A No Action remedy was proposed for IHSS 192 – Antifreeze Discharge and was approved in 1994 because it was unlikely that antifreeze was still present in the environment from the IHSS 193 spill (DOE 1994).

Results from subsurface soil sampling at IHSS 154 (Pallet Burn Site) (approximately 170 ft south of SW056) indicated that VOCs were detected but at concentrations close to detection limits. Methylene chloride was detected at a maximum concentration of 2.2 ug/kg. The VOCs 1,1-dichloroethene, carbon tetrachloride, tetrachloroethene, and trichloroethene were not detected.

IHSS 153 (Oil Burn Pit) is approximately 375 ft southeast of SW056 and underwent accelerated actions to remove VOCs and PCBs from subsurface soil. HRC-Xtm was inserted to enhance VOC degradation at this location. Subsurface soil maximum residual VOC concentrations include 1,1-dichloroethene at 61 ug/kg, carbon tetrachloride at 19 ug/kg, methylene chloride at 23 ug/kg, tetrachloroethene at 332,000 ug/kg, and trichloroethene at 11,600 ug/kg. All results were less than RFCA WRW soil ALs (DOE 2005-).

At IHSS 112 (903 Pad), which is approximately 460 ft south of SW056, subsurface soil maximum residual VOC concentrations include carbon tetrachloride at 1,300 ug/kg, tetrachloroethene at 7,180 ug/kg, and trichloroethene at 167 ug/kg. Neither 1,1-dichloroethene nor methylene chloride were not detected. All results were less than RFCA WRW soil ALs. HRC-Xtm was inserted to enhance VOC degradation (DOE 2005-).

2.2 Accelerated Action

The accelerated action objectives include the following:

- Trench at the elbow upgradient of the outfall and disrupt the piping. The excavation is anticipated to be 20 to 25 feet deep.
- Remove piping in excavated area. Backfill the lower portion of the excavation where the piping existed with flow fill or other low permeable material.
- Remove piping outfall to at least 3 feet below grade. Backfill with soil and compact to site specifications.
- Install a monitoring well at a location determined in consultation with the Regulatory Agencies.
- Add HRC at location(s) determined in consultation with the Regulatory Agencies.

2.3 Stewardship Evaluation

Because the full extent of excavation and remediation is not known at this time, an additional stewardship evaluation will be conducted during remediation using the consultative process. The following sections present the stewardship evaluation.

2.3.1 Proximity to Other Contaminant Sources

The closest IHSS is IHSS 192 which is located less than 10 feet from the SW056 outfall. A No Action remedy was proposed for IHSS 192 – Antifreeze Discharge and was approved in 1994 because it was unlikely that antifreeze was still present in the environment from the IHSS 193 spill (DOE 1994).

Results from subsurface soil sampling at IHSS 154 (Pallet Burn Site) (approximately 170 ft south of SW056) indicated that VOCs were detected but at concentrations close to detection limits. Methylene chloride was detected at a maximum concentration of 2.2 ug/kg. 1,1-dichloroethene, carbon tetrachloride, tetrachloroethene, and trichloroethene were not detected.

IHSS 153 (Oil Burn Pit) is approximately 375 ft southeast of SW056 and underwent accelerated actions to remove VOCs and PCBs from subsurface soil. HRC-Xtm was inserted to enhance VOC degradation at this location. Subsurface soil maximum residual VOC concentrations include 1,1-dichloroethene at 61 ug/kg, carbon tetrachloride at 19 ug/kg, methylene chloride at 23 ug/kg, tetrachloroethene at 332,000 ug/kg, and trichloroethene at 11,600 ug/kg. All results were less than RFCA WRW soil ALs.

At IHSS 112 (903 Pad), which is approximately 460 ft south of SW056, subsurface soil maximum residual VOC concentrations include carbon tetrachloride at 1,300 ug/kg, tetrachloroethene at 7,180 ug/kg, and trichloroethene at 167 ug/kg. Neither 1,1-dichloroethene nor methylene chloride were not detected. All results were less than RFCA WRW soil ALs. HRC-Xtm was inserted to enhance VOC degradation.

2.3.2 Surface Water Protection

Surface water protection includes the following considerations:

Is there a pathway to surface water from potential erosion to streams or drainages?

Yes. The immediate area is a drainage and is part of Functional Channel No. 4.

Do characterization data indicate there are contaminants in surface soil?

No. Surface soil characterization data was not collected at this location. Soil characterization information is presented in Section 3.2.1.

Do monitoring results from Points of Evaluation (POEs) or Points of Compliance (POCs) indicate there are surface water impacts from the area under consideration?

No. SW056 is a surface water sampling station, but not a POE or POC. Water from the nearest POE is GS10 which is approximately 1,500 ft northeast of SW056. This POE is not routinely monitored for VOCs.

Is the location in an area with high erosion potential?

Yes, the area is on a slope and is prone to erosion in accordance with RFCA Attachment 5, Figure 1.

2.3.3 Monitoring

Monitoring includes the following considerations:

Do monitoring results from POEs or POCs indicate there are groundwater impacts from the area under consideration?

There are no groundwater wells that monitor this area, however, results for SW056 indicate that the piping intersects upgradient groundwater VOCs.

Can the impact be traced to a specific IHSS Group?

No. VOC contamination of groundwater cannot be attributed to a specific source. However, several groundwater plumes associated with the IA are present at RFETS.

Are additional monitoring stations needed?

A groundwater monitoring well will be installed.

Can existing monitoring locations be deleted if additional remediation is conducted?

Not Applicable.

2.3.4 Stewardship Actions and Recommendations

The current stewardship actions and recommendations are as follows:

- Use BMPs to reduce erosion into surface water drainage.
- Implement near-term institutional controls until final closure and stewardship decisions are implemented, including the following:
 - Restrict access; and
 - Control soil excavations through the Site Soil Disturbance Permit process.
- Implement long-term stewardship actions, including the following:
 - Prohibitions on construction of buildings in the area;
 - Restrictions on excavations or other soil disturbances; and
 - Prohibitions on groundwater pumping in the area.

These recommendations may change based on in-process remediation activities and other future RFETS remediation decisions.

2.4 Accelerated Action Remediation Goals

ER RSOP remedial action objectives (RAOs) include the following:

- Provide a remedy consistent with the RFETS goal of protection of human health and the environment;
- Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls; and
- Minimize the spread of contaminants during implementation of accelerated actions.

2.5 Treatment

HRCtm will be inserted in the area of the pipe and, potentially at other locations to be determined in consultation with the Regulatory Agencies.

2.6 RCRA Units and Intended Waste Disposition

Not applicable.

2.7 Administrative Record Documents

Not applicable

2.8 Projected Schedule

Pipe removal began on September 26, 2005 in accordance with a Contact Record (see Appendix A).

3.0 PUBLIC PARTICIPATION

ER RSOP Notification #05-09 activities will be discussed at the October Transition Meeting. The outfall itself was discussed at the September Transition Meeting. This Notification is available at the Rocky Flats Reading Rooms.

Appendix A
Regulatory Contact Record

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE ER REGULATORY CONTACT RECORD

Date/Time: 9/22/05 10:00

Site Contact(s)/Phone: John Rampe/DOE, Dave Shelton/K-H, Jan Walstrom/K-H
303-966-6246 303-966-9877 303-966-5028

Regulatory Contact/Phone: Mark Aquilar, Larry Kimmel, David Kruchek, Carl Spreng
303-312-6251 303-312-6659 303-692-3328 303-692-3358

Agency: EPA EPA CDPHE CDPHE

Purpose of Contact: SW056 Disposition

DISCUSSION

As agreed upon, following is the method agreed upon to disposition SW056 location to minimize surface water impacts in this area:

- Trench at the elbow upgradient of the outfall and disrupt the piping. The excavation is anticipated to be 20 to 25 feet deep.
- Remove piping in excavated area. Backfill the lower portion of the excavation where the piping existed with flow fill or other low permeability material.
- Remove piping outfall to at least 3 feet below grade. Backfill with compacted soil.
- Install a monitoring well at a location determined in consultation with the Regulatory Agencies.
- Add HRC at 4 to 6 injection/insertion points.

An ER RSOP will be developed for this work scope. However, work is authorized to begin under this contact record.

Contact Record Prepared By: Karen Wiemelt

Required Distribution:

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13/13